Ames IT Base Research for Web-based RLV Design

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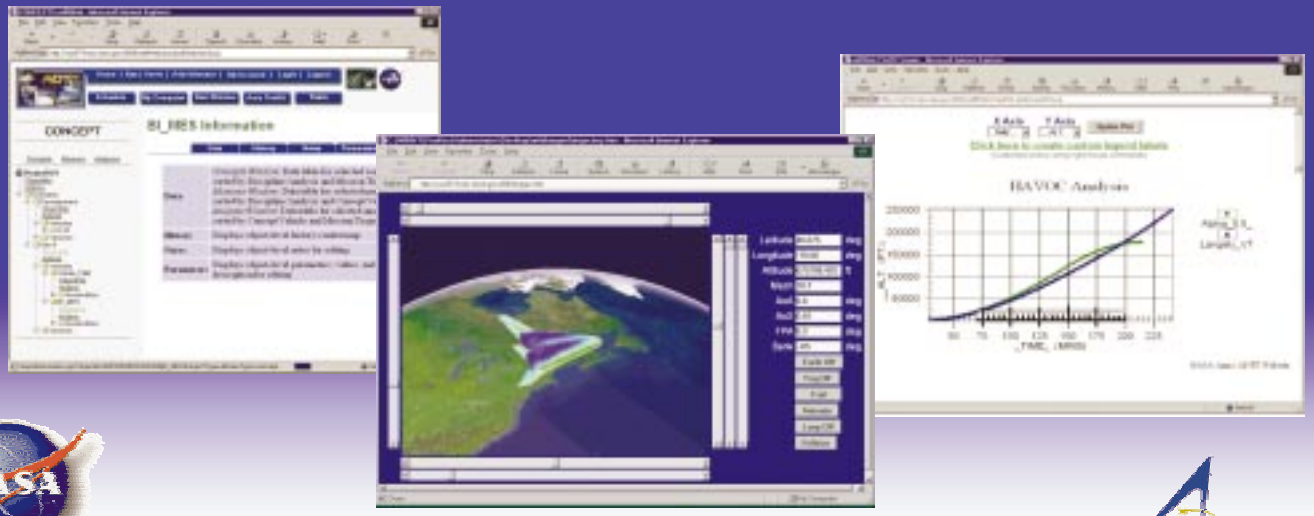

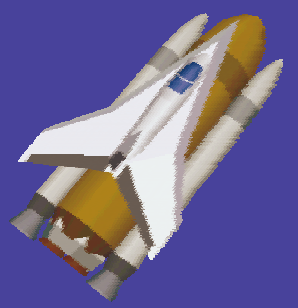

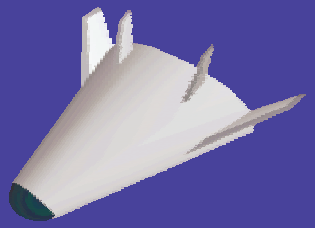

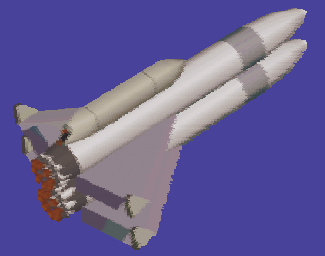

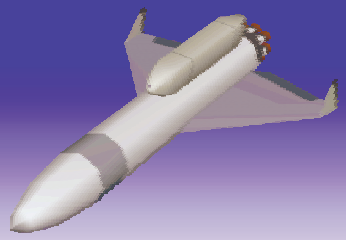

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Agenda

- IT Base elements and ATED objectives
- ARC legacy in integrated design systems
- Lessons learned from previous systems
- Demo of ADTT-Web System
  - Objectives
  - Architecture overview
  - Perform design change - modify, analyze, examine
- Technology transfer areas
- Future ATED work

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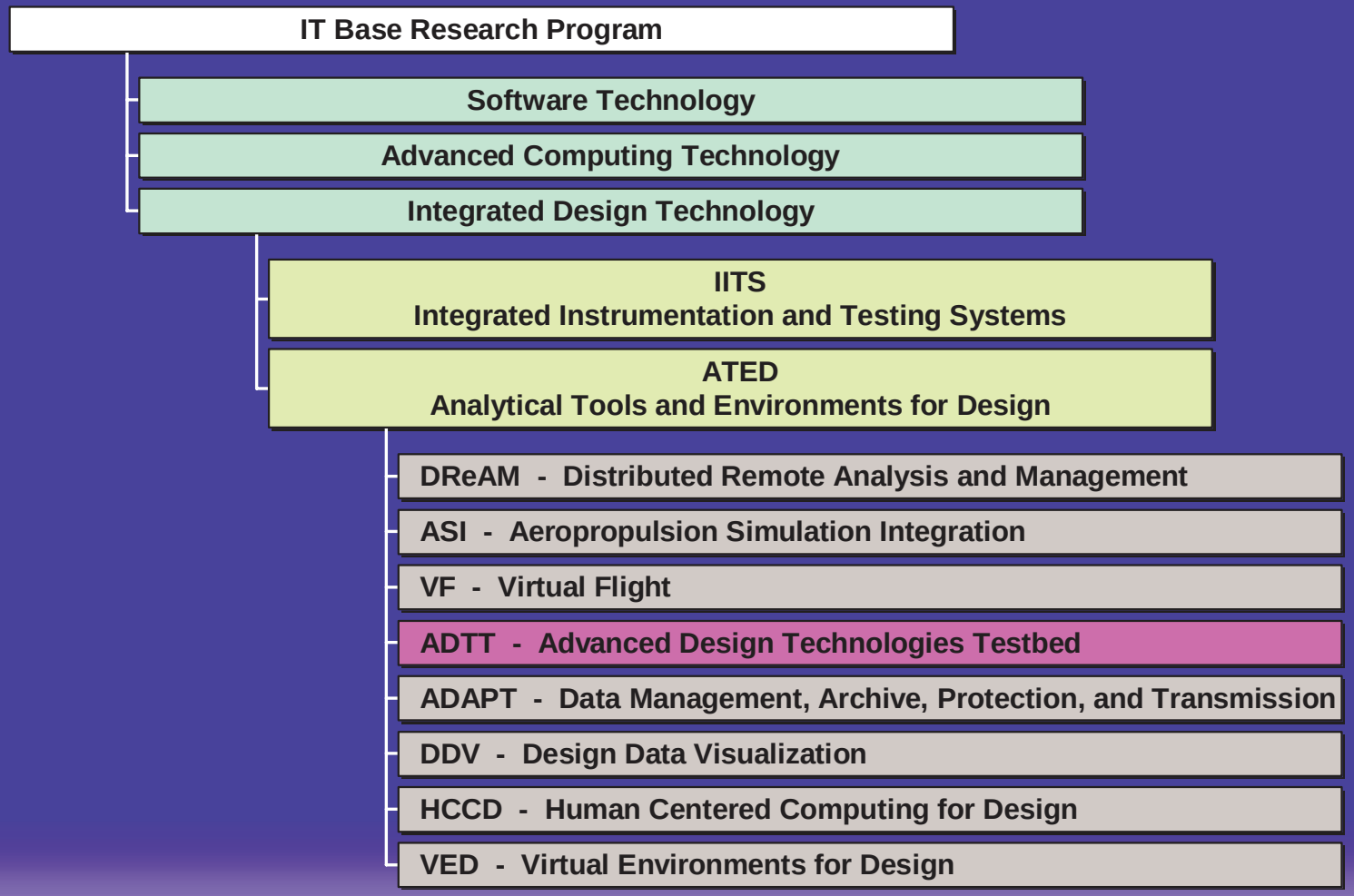
IT Base Program



IT Base / IDT-ATED Objectives

- Insert IT into prototype integrated design environments
  - Object, web, and database technologies
  - Intelligent agent architectures
  - Knowledge capture and re-use
  - Collaborative design team environments
  - Variable-fidelity data fusion
  - Novel data presentation
- Transfer technology and experience to agency programs

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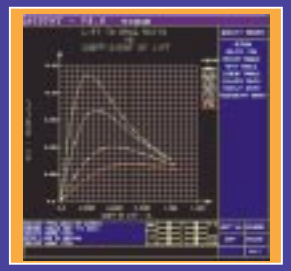
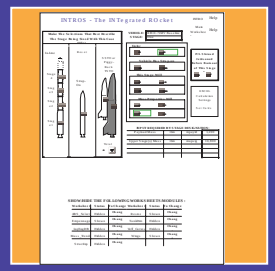
Integrated Design Systems

	DARWIN	FEST	MSFC-App	ADTT-Web
				
Date:	1995+	1997	1999	2000 +
Type:	Web	Java App	TCL/TK	Web
Purpose:	WT data	HWT design	Bantam	Space Vehicle
DB:	Sybase	UNIX	---------	ObjectStore
Tools:	2D Chart	CFD	INTROS	CFD/CAE
	Flo viz	PRO-E	PRO-E	PRO-E
		2D/3D viz	HAVOC	2D/3D viz
			NAFCOM	Collaboration

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Lessons Learned

- Platform dependence can be a good thing
- There is always a newer technology
- It takes at least three tries to get things right
- Design assuming change
  - Don’t write GUIs, write software that writes GUIs
- **Caveat Emptor**
  - NASA Contract #NAS2-00062 Report

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ADTT-Web Design System

- Objective : collaborative preliminary design for RLVs
- Architecture
  - Web browser client interface using MS IE 5+ on Win 98/NT/2000
  - JSP, DHTML, Active-X plug-ins
  - ObjectStore DB, scripts to run CAD and launch analyses
- Available Tools
  - Collaborative geometry visualization (iEngineer / Vuent)
  - PRO-ENGINEER
  - HAVOC mission analysis
  - 2D/3D visualization
- System descriptive report available in February

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Web-enabled Design Change

- Browse data in database
- Collaborate on the geometry (iEngineer/Vuent)
- Modify the geometry with ProENGINEER
- Launch HAVOC for mission analysis
- Compare results in 2D (GigaSoft)
- View trajectory in 3D
  - Browser (Wild Tangent)
  - World Tool Kit

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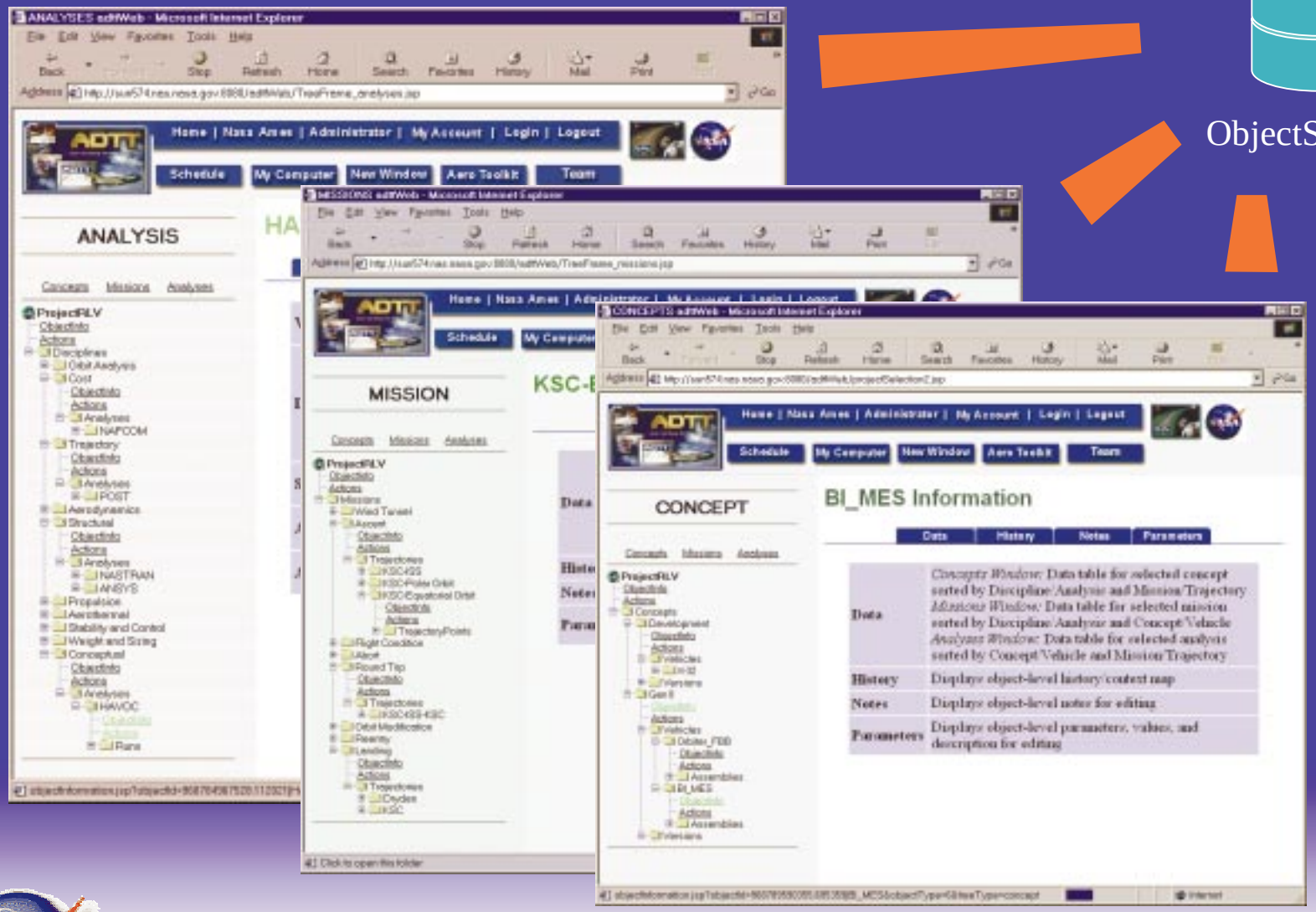
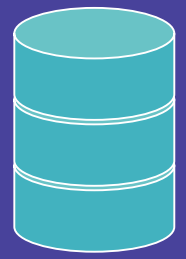
Three Perspectives





ObjectStore DB

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IT Technology Transfer to RSTS

- Web infrastructure
- Database schema
- JSP - database connectivity
- CAD and analysis scripting
- Web visualization / simulation techniques

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ARC IT Base: Future Work

- Fusion of variable fidelity, multi-disciplinary data
- Data presentation and navigation strategies
- Automated design assistance
- Intelligent agents for process reconfigurations
- Design intent and history
- Continue technology transfer

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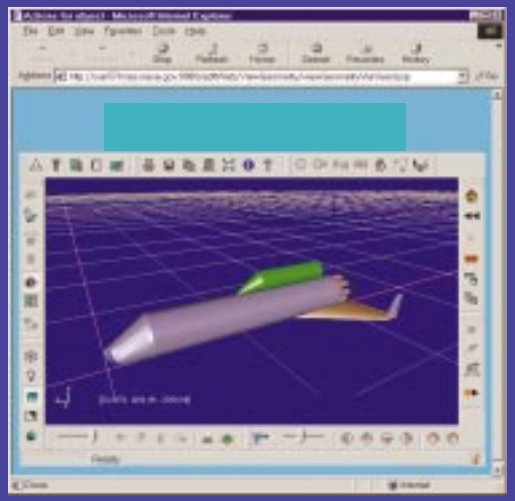
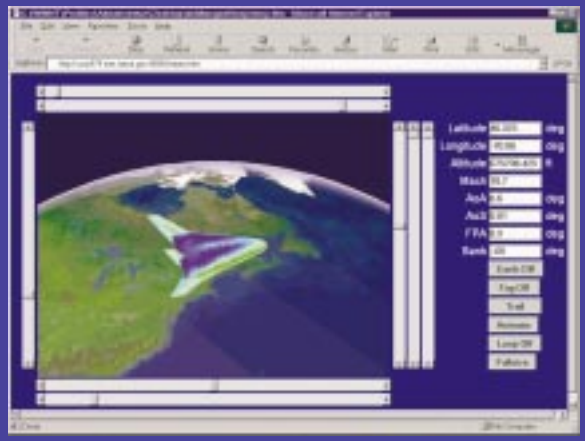
Browser Access to Data

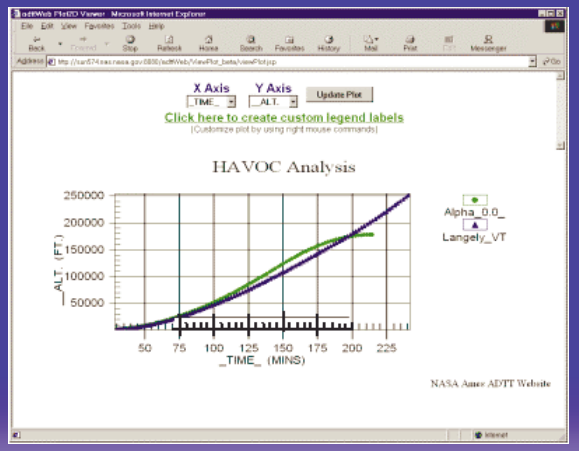


Geometry Markup



Mission Visualization

Design Comparisons



Automated Analyses

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